REMARKS

Claims 1-10 were pending in this application. Claims 1, 6 and 10 have been amended and claims 4-5 and 8-9 have been cancelled. Claims 1-3, 6-7 and 10 remain pending in this application.

Claims 1 and 3-5 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,408,559 to Takahashi et al. ("Takahashi"). Claim 2 was rejected under 35 U.S.C. §103(a) as being unpatentable over Takahashi in view of U.S. Patent Publication No. 2004/0184744 to Uekawa ("Uekawa"). Claims 6-9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Takahashi in view of U.S. Patent No. 6,985,646 to Takamori ("Takamori"). Claim 10 was rejected under 35 U.S.C. §103(a) as being unpatentable over Takahashi and Takamori and further in view of Uekawa.

The present invention is directed to a bi-directional optical module package having an optical module unit. The optical module unit comprises a substrate member; an optical filter installed on the substrate member to be inclined with respect to an optical fiber; a first holder supported by the substrate member on one side of the optical filter and having a laser diode and a lens for transmitting an optical signal to the optical fiber through one side of the optical filter; and a second holder supported by the substrate member on the other side of the optical filter and having a photodiode and a lens for receiving the optical signal received through the optical fiber. The first holder includes a first base portion having a laser diode, a pad and a circuit pattern installed thereon, and first extending portions which extend from both sides of the first base portion to define a fixed position of the lens. The second holder includes a second base portion having a photodiode installed on an inner surface thereof and a wire bonding pad installed

thereon, and second extending portions which extend from both sides of the second base portion to define a fixed position of the lens. The inclined planes having the same gradient as that of an external surface of the optical filter are formed on at least one end portions of the first extending portions and at least one end portions of the second extending portions so that the optical filter is disposed between the inclined planes.

In that the laser diode and the photodiode are installed on the first and second holders and the optical filter is fixed between the inclined plane of the first extending portion of the first holder and the inclined plane of the second extending portion of the second holder, the size of the optical filter unit can be reduced (within 2x2x1 (mm)), thereby manufacturing optical modules that meet international standard requirements. Also, since a distance between the laser diode and the photodiode is short, a manual alignment method by mechanical tolerance can be used and the number of operations required in the manual alignment method can be reduced.

Takahashi discloses optoelectronic device having a light transmitter 1, a light receiver 7, a wave-separating optical unit 13, and optical fiber 19. The light transmitter 1 includes a laser diode ("LD") element 2, a stem 4 on which the LD element 2 is mounted, and aspherical lens cap 3. The aspherical lens cap 3 includes an aspherical lens 3A and a support 3B for supporting the aspherical lens 3A. The light receiver 7 includes a photodiode ("PD") element 8, a stem 11 on which the PD element 8 is mounted, and a PD cap 10. The optical unit 13 includes a focusing lens 18, a wave-separating filter 16, and a support case 14 for supporting the focusing lens 18 and the wave-separating filter 16. The wave-separating filter 16 is supported on a support 15 formed integrally with the support case 14.

In the present invention, the LD and lens are installed on the first holder, and PD and lens are installed on the second holder, and the optical filter is disposed between the first holder and the second holder. However, in Takahashi, the LD element 2 is mounted on the stem 4, and the aspherical lens 3A are supported by the support 3B, which is part of lens cap 3, a separate element from the stem 4. The PD element 8 of Takahashi is mounted on the stem 11, and the focusing lens 18 and the wave-separating filter 16 are supported by the support 15, which is a separate element from the stem 11. Because Takahashi does not teach or suggest the structure claimed in claim 1 of the pending application, applicant respectfully submits that the anticipation rejection based on Takahashi has been traversed. Furthermore, Applicant respectfully submits that the addition of Uekawa and Takamori fail to teach or suggest the structure for claim 1, and therefore claim 1 is in condition for allowance. Claims 2 and 3, which depend from claim 1, are believed to be allowable for at least the same reasons as set forth above.

Claims 6-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Takahashi in view of Takamori. Claim 10 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Takahashi and Takamori and further in view of Uekawa. As amended, claim 6 requires that

> the first holder includes a first base portion having a laser diode, a pad and a circuit pattern installed thereon, and first extending portions which extend from both sides of the first base portion to define a fixed position of the lens, and the second holder includes a second base portion having a photodiode installed on an inner surface thereof and a wire bonding pad installed thereon, and second extending portions which extend from both sides of the second base portion to define a fixed position of the lens, and

wherein inclined planes having the same gradient as that of an external surface of the optical filter are formed on at least one end portions of the first extending portions and at least one end portions of the second extending portions so that the optical filter is disposed between the inclined planes.

Similar to claim 1 above, neither Takahashi nor Takamori, alone or in combination, teach or suggest the limitations cited above and included in amended claim 6. This deficiency is not cured by the addition of Uekawa, alone or in combination with the other cited references. Because the cited references do not teach or suggest the claimed limitations, Applicant respectfully submits that the rejection has been traversed and that claim 6 is in condition for allowance. Moreover, claims 7 and 10, which depend from claim 6, are believed to be allowable for at least the same reasons.

Finally, the specification was amended at page 1, line 18 to correct a typographical error.

Conclusion

It is respectfully submitted that the application now is in condition for allowance. The Examiner is invited to telephone the undersigned to discuss remaining issues, if there are any. The Commissioner hereby is authorized in this and concurrent replies to charge payment (or credit any overpayment) to Deposit Account No. 50-2298 for any additional fees required under 37 CFR 1.16 or 1.17.

Respectfully submitted,

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